Gwaing Biosolids Beneficiation Facility on Erf 73, Western Cape

Terrestrial Animal Species Specialist Assessment:

Site Sensitivity Verification Report and Compliance Statement

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Date:	April 2025
Version:	Final

DECLARATION OF SPECIALIST INDEPENDENCE

- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development that this study has reference to, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public;
- I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse any proposed developments, but aim to present facts, findings, and recommendations based on relevant professional experience and scientific data;
- I do not have any influence over decisions made by the governing authorities;
- I undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by a competent authority to such a relevant authority and the applicant;
- I have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the relevant Act, regulations and any guidelines that have relevance to the proposed activity;
- This document and all information contained herein is and will remain the intellectual property of Confluent Environmental. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the specialist investigators.
- All the particulars furnished by me in this document are true and correct.

Kim Daniels (MSc)

April 2025

SUMMARY OF EXPERIENCE AND ABRIDGED CV - KIM DANIELS

Core skills

Three years of work experience (research assistance and education) for projects aimed at investigating invertebrate diversity, plant diversity, insect ecology, disease ecology, invasive species, plant systematics, herpetology, and climate change impacts on a variety of taxa.

Ecological and field work experience before, during, and after postgraduate degrees across a range of environments (mesic savanna, arid savanna, fynbos, succulent karoo, and Nama karoo) and taxa (plants, invertebrates, avifauna, amphibians, and small mammals).

My postgraduate studies have been focused on vegetation change in the fynbos and parasitic plants as thermal refugia for savanna birds.

Work experience

Teaching assistant at the Organization of Tropical Studies and Roots & Shoots

Visiting academic for the Organization of Tropical Studies' African Ecology and Conservation course

Internships in Entomology, Horticulture, and Plant Conservation

Research assistant at the Centre for Invasion Biology

Field assistant at Valuing Orchard and Integrated Crop Ecosystem Services Project

Qualifications

BSc. Biodiversity and Conservation Biology (2018, University of the Western Cape)

BSc. Hons. Biodiversity and Conservation Biology (2021, University of the Western Cape)

MSc. Conservation Biology (2023, University of Cape Town)

References

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ABBREVIATIONS AND ACRONYMS

CBA	Critical Biodiversity Area
CD:NGI	Chief Directorate: National Geo-spatial Information
DFFE	Department of Forestry, Fisheries, and the Environment
ESA	Ecological Support Area
EWT	Endangered Wildlife Trust
NEMA	National Environmental Management Act
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDP	Site Development Plan
SSVR	Site Sensitivity Verification Report
WCBSP	Western Cape Biodiversity Spatial Plan

1. INTRODUCTION

Confluent Environmental Pty (Ltd) was appointed to provide Terrestrial Animal Specialist inputs for the proposed development of Gwaing Solar Drying Facility or Biosolids Beneficiation Facility as part of the upgrade of Gwaing Wastewater Treatment Works in George, Western Cape.

1.1 General Site Location

The project area is placed within the boundaries of the proposed mixed-use development, Gwayang Precinct, proposed by the George Municipality (See Section 1.3). The project area is located adjacent to the Gwaing Wastewater Treatment Works (WWTW) with access obtained from the R102 'airport road'. The George waste disposal site (dump) is north-west of the project area. Figure 1 shows the Gwayang Precinct outlined and the proposed area for the Gwaing Biosolids Beneficiation Facility (BBF), with the project area totalling ca. 6,6 ha (Figure 1).

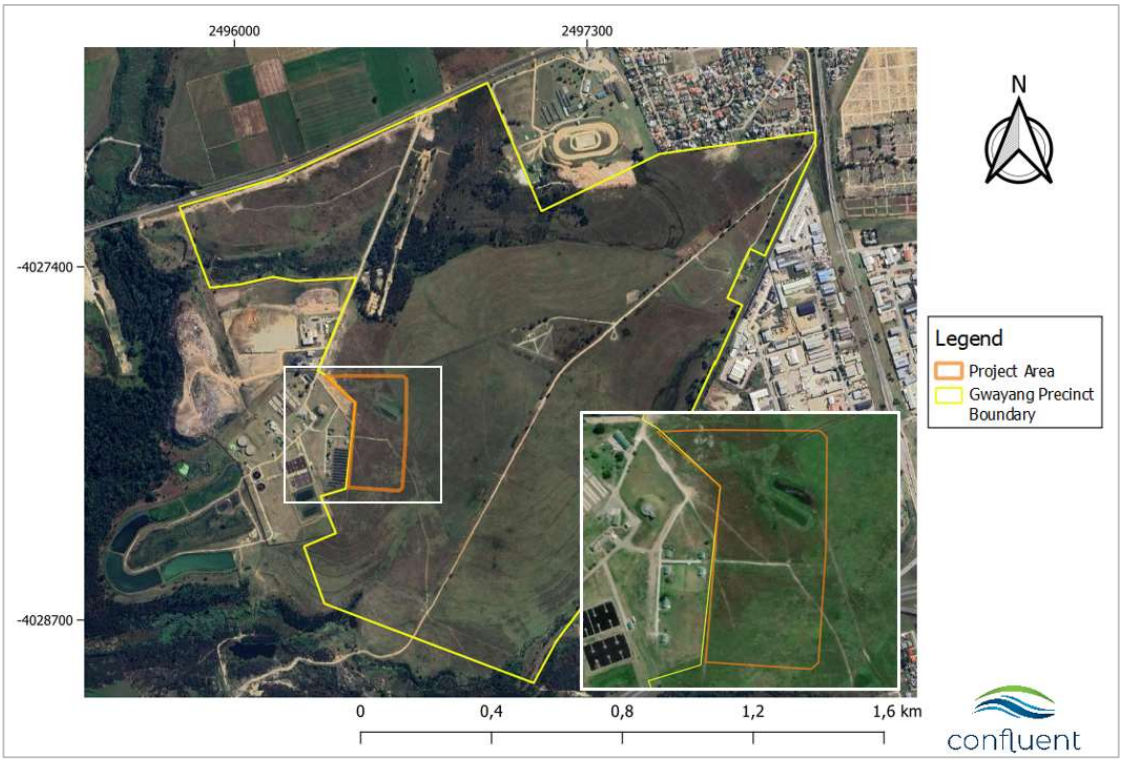

Figure 1. The Gwayang Precinct Development Area (yellow). The project area is outlined in orange. The inset map (relative scale outlined in white on the larger map) shows the Biosolids Beneficiation Facility project area in relation to the wastewater treatment works (west).

1.2 Development Layout

At the time of writing this report the site development plan (SDP; Figure. 2) includes an advanced solar drying facility including translucent roof sheeting, forced ventilation, and a sludge turner and spreader to reduce the footprint of the development (Figure 3).

The infrastructure required for the Gwaing BBF facility can be summarized as follows:

i. Guard House
ii. Perimeter fencing and access gate
iii. Approximately 30 000 m^2 of concrete slabs for the various stages of sludge stockpiling, solar drying, composing, and sludge handling. This includes the areas under translucent roof sheeting for solar drying.
iv. Approximately 13 000 m^2 in plan view of translucent roof sheeting ('greenhouse') structures.
v. One 18m x 36m shed with a clear height of 4.5m and without any columns inside the building for the sludge granulation plant.
vi. A second building of similar footprint for the packaging plant and distribution depot. This building is to include offices, ablution, and a canteen for the operating staff of approximately 6 people.
vii. Movable precast concrete walls placed on slabs to demarcate separated process areas and to prevent contamination of treated sludge by raw sludge.
viii. Access Roads
ix. Rainwater collection and storage from all roof structures
x. Stormwater collection and drainage from concrete slabs with pipeline to Gwaing WWTW inlet works.

Figure 2 shows the proposed layout of all the new infrastructure for the development.

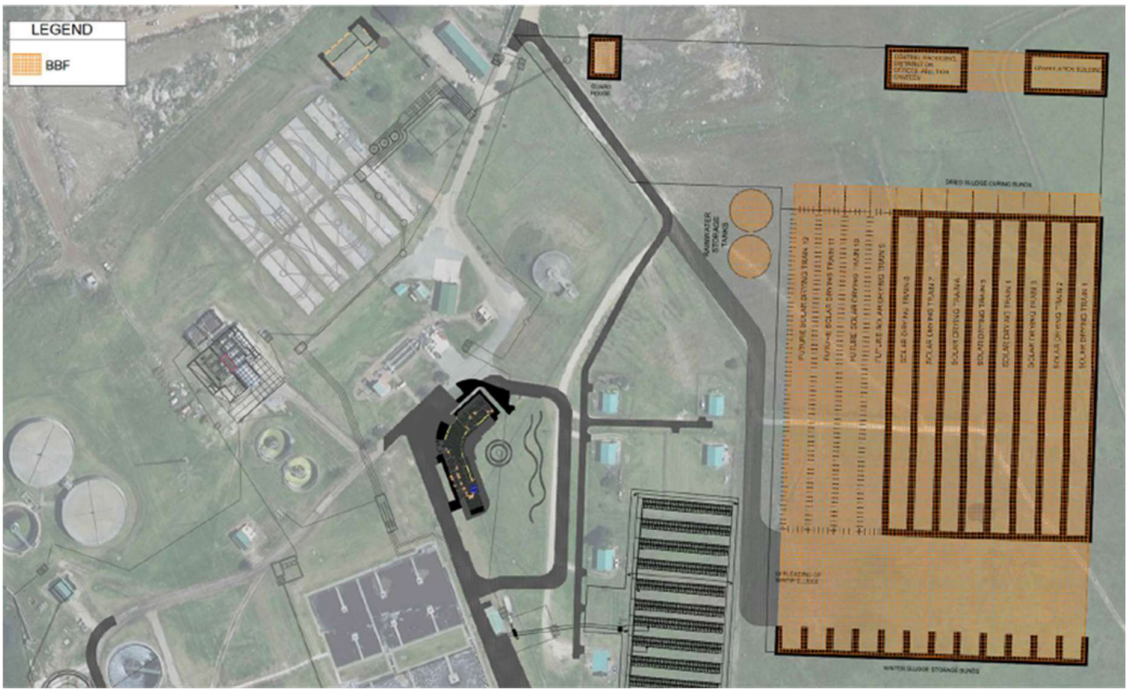

Figure 2. Proposed layout of the Gwaing Biosolids Beneficiation Facility

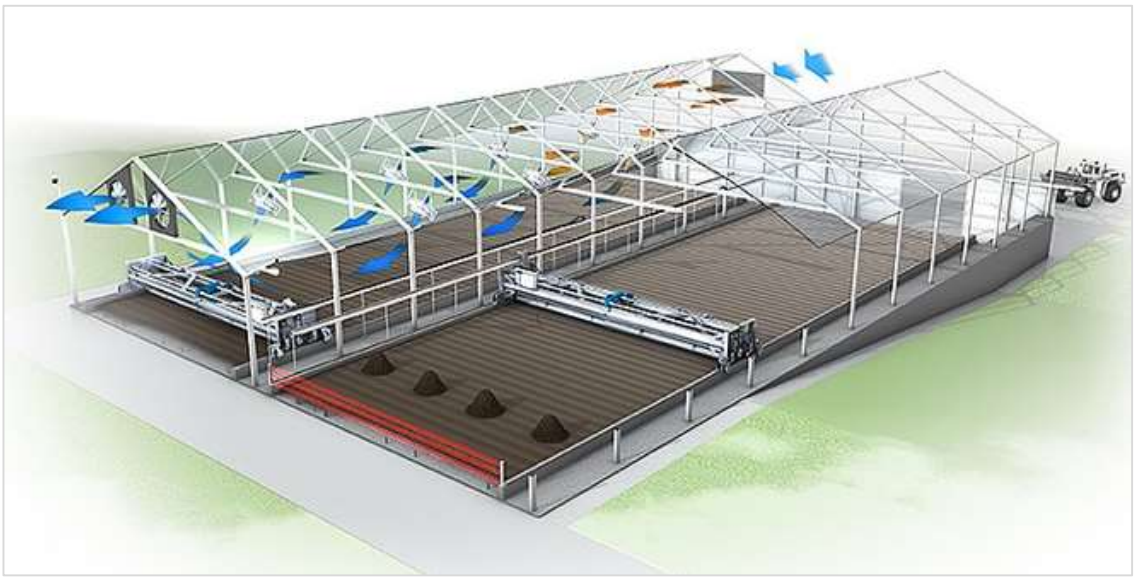

Figure 3. An example of advanced solar drying facility including translucent roof sheeting, forced ventilation and a sludge turner and spreader.

1.3 Gwayang Precinct

Additionally, Confluent Environmental had been appointed to provide inputs on the development of the greater Gwayang Precinct which the development outlined in Section 1.2 would form part of. The development is proposed by the George Municipality, who would like to create registrable erven (of which the erf outlined for the Gwaing BBF forms part of) for release in an integrated mixed-use development. Terrestrial Animal Species inputs were

provided to inform the conceptual development plan, which had subsequently been revised to produce at least two alternative layouts and was later modified to accommodate various requirements and site sensitivities. Balancing of environmental and transport sensitives led to the introduction of a preferred SDP (Figure 4) for the Gwayang Precinct.

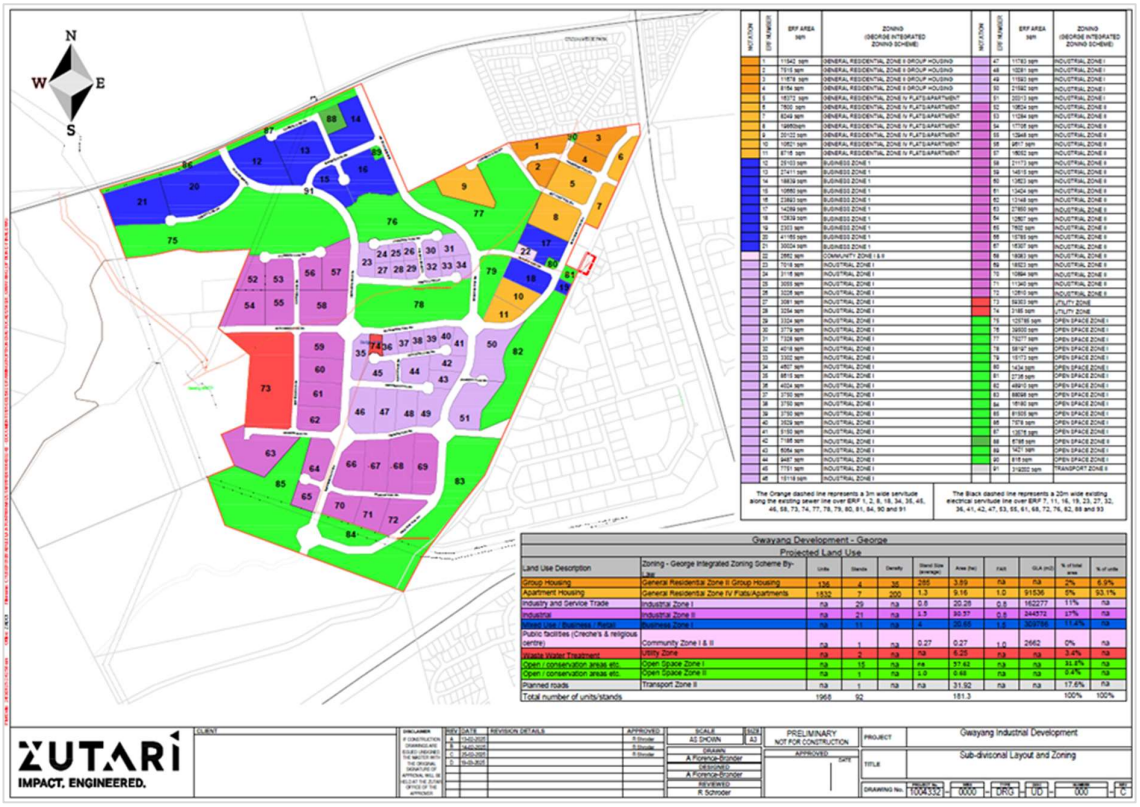

Figure 4. The preferred SDP layout and land use areas following engagement with various specialists

A full desktop and field assessment was conducted for the site for the variety of SCC flagged to occur. Forest Buzzard (*Buteo trizonatus*) and Fynbos Golden Mole (*Amblysomus corriae*) were confirmed present at the site, with the species-level classification of the latter being verified by means of a genetic study. SCCs with a Medium to High likelihood of occurrence were Knysna Leaf-folding Frog (*Afrixalus knysnae*; Medium-High) flagged for wetlands, Long-tailed Forest Shrew (*Myosorex longicaudatus*; Medium) flagged for wetland habitats, Blue Crane (*Anthropoides paradiseus*; Medium) likely to occur in pasture and, Denham's Bustard (*Neotis denhami*; Medium-High) also likely to occur in pasture.

2. TERMS OF REFERENCE

2.1 Online Screening Tool

The scope of work for this report is guided by the legislative requirements of the National Environmental Management Act (NEMA; Act 107 of 1998).

The Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool determined a HIGH and MEDIUM sensitivity for the terrestrial animal species theme across

the project area (Figure. 5), with several animal Species of Conservation Concern (SCC) potentially present (Table 1).

As per Published Government Notice No. 1150 of the Government Gazette 43855 (30 October 2020):

A **HIGH** sensitivity rating indicates:

1. Confirmed habitat for SCC.

2. SCC, listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable, according to the IUCN Red List 3.1. Categories and Criteria and under the national category of Rare.

These areas are unsuitable for development due to a very likely impact on SCC.

A **MEDIUM** sensitivity rating indicates:

1. Suspected habitat for SCC based either on historical records (prior to 2002) or being a natural area included in a habitat suitability model for this species.

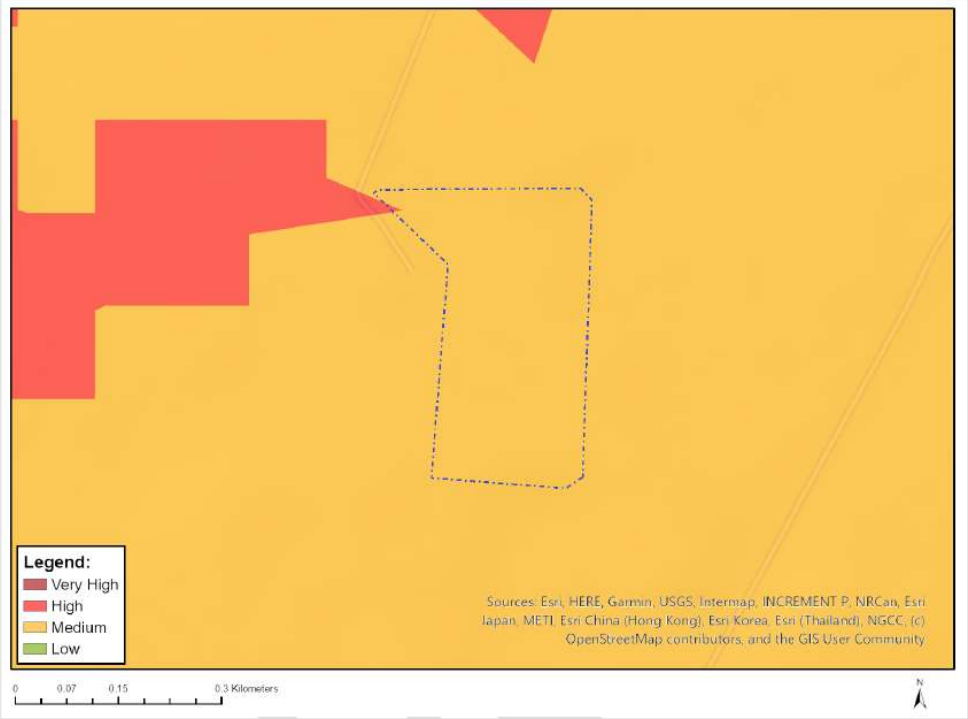

Figure 5. DFFE Online Screening Tool outcome for the terrestrial animal species theme. The project area is indicated by the blue dashed line.

Table 1. Species of Conservation Concern highlighted by the DFFE Online Screening Tool for the project area.

Sensitivity	Taxon	Scientific name	Common name	Red list status*
High	Avifauna	*Bradypterus sylvaticus*	Knysna warbler	Vulnerable
Medium	Amphibia	*Afrixalus knysnae*	Knysna leaf-folding frog	Endangered
Medium	Mammals	-	Sensitive species 8	Vulnerable
Medium	Invertebrates	*Aneuryphymus montanus*	Yellow-winged agile grasshopper	Vulnerable

* Red list status as per SANBI's Red List of South African Species http://speciesstatus.sanbi.org

The list of SCC as for the Gwayang Precinct includes the following species (Table. 2):

Table 2. Species of Conservation Concern highlighted by the DFFE Online Screening Tool for the Gwayang Precinct.

Sensitivity	Classification	Scientific name	Common name	Red list status*
High	Avifauna	*Circus ranivorus*	Marsh Harrier	Endangered
High	Avifauna	*Neotis denhami*	Denham's Bustard	
High	Avifauna	*Bradypterus sylvaticus*	Knysna Warbler	Vulnerable
High	Avifauna	*Polemaetus bellicosus*	Martial Eagle	Endangered
Medium	Amphibian	*Afrixalus knysnae*	Knysna Leaf-folding Frog	Endangered
Medium	Avifauna	*Stephanoaetus coronatus*	Crowned Eagle	Vulnerable
Medium	Invertebrate	*Aneuryphymus montanus*	Yellow-winged Agile Grasshopper	Vulnerable

2.2 Scope of work

The purpose of this report is to verify the site sensitivity of the project area for the terrestrial animal species theme in accordance with the protocols specified in the Published Government Notice No. 1150, Government Gazette 43855 (30 October 2020).

The site sensitivity verification includes:

- A desktop assessment, to:
    - Characterize the vegetation, climate, general habitat features and topography of the property.
    - Assess the property's location within the context of the Western Cape Biodiversity Spatial Plan (WCBSP).
    - Conduct a historical assessment of the property and immediate surroundings for any disturbances, development and changes in land use or habitat characteristics over time.

    - Provide information on the habitat requirements for Species of Conservation concern highlighted by the DFFE online screening tool, in addition to other SCC indicated through online resources for the project area and surrounding areas.

- On-site inspection(s) and field assessments to:
    - Verify the current land use and identify current impacts or disturbances on the property.
    - Characterize faunal habitats, determine the habitat suitability and the likelihood of SCC occurring in the project area.
    - Conduct taxa-specific sampling for SCC in suitable habitats.
- Any other available and relevant information from
    - Discussions with landowners/neighbours.
    - Previous report findings for the property or surrounding areas.

Should the site sensitivity verification indicate a **LOW** sensitivity, then a Terrestrial Animal Species Compliance Statement will be issued.

Should the site sensitivity verification indicate a **HIGH** sensitivity, then a Terrestrial Animal Species Specialist Assessment will be compiled.

3. DESKTOP ASSESSMENT

3.1 Vegetation, Climate and General Habitat

George, Western Cape falls within the Fynbos biome and experiences a temperate climate year-round (Mucina and Rutherford 2006, Rebelo *et al.* 2006). The mapped vegetation type over the project area is Garden Route Granite Fynbos (Critically Endangered) - a detailed botanical specialist assessment for the site is available (B. Fouche Confluent Environmental). Average temperatures range between 26^0C and 6^0C, with the hottest days experienced from December to March peaking around 36^0C and the coldest days experienced in June and July. Rain occurs throughout the year in a bimodal pattern with peaks in autumn (April) and spring (October-November) (Figure 6).

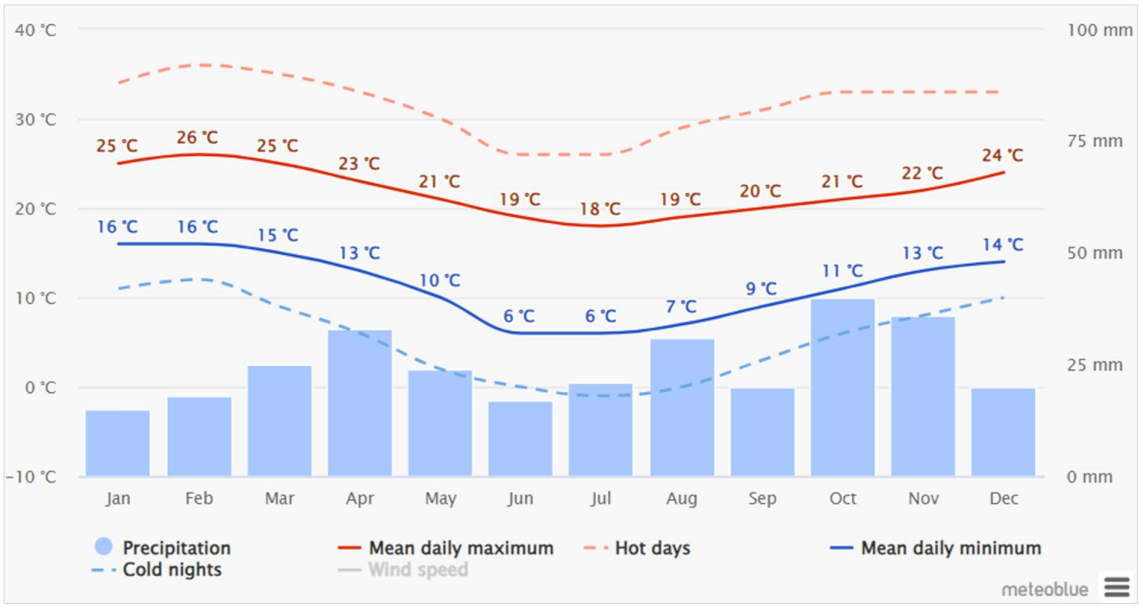

Figure 6. Summary of historical climate (modelled) for George (www.meteoblue.com).

Satellite imagery from Google Earth and Cape Farm Mapper was used to assess general vegetation structure, elevational gradients, and water bodies (NWM5) within the project area (Figure 77). The site is transformed by agriculture (pasture). Topography is flat over much of the agricultural fields.

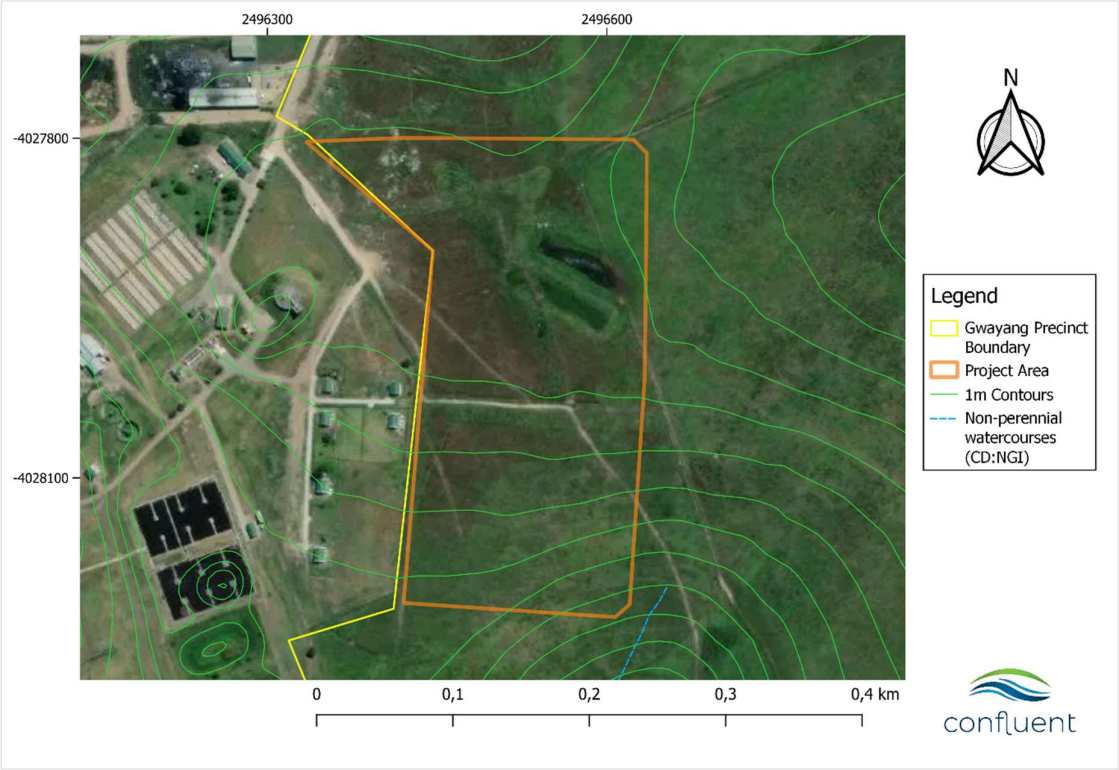

Figure 7. The project area for the biosolids beneficiation facility outlined in orange. Contour lines and mapped watercourses (CD:NGI) are included.

3.2 Western Cape Biodiversity Spatial Plan

The Western Cape Biodiversity Act 6 of 2021 (WCBA) recognises the unique biodiversity in the Western Cape, the Republic's international obligations, the province's dependence on ecosystem services, the need for access and benefit sharing, and the need to ensure long-term ecological resilience.

Section 35 of the WCBA defines that the purpose of a Biodiversity Spatial Plan (BSP) is to:

- Set biodiversity targets.
- Spatially identify one or more categories of biodiversity priority areas that will ensure the continued existence and functioning of biodiversity and ecosystems, including the delivery of ecosystem services.
- Provide guidelines that set out the desired management objectives for land and resource use in each category of biodiversity priority areas.
- Provide spatial planning and land-use decision-making guidelines to ensure environmentally sustainable development and resource use, as well as ecological and spatial resilience in the province.

- Ensure that the ecological infrastructure in the province is maintained, ecosystem fragmentation and loss are avoided, and the resilience of ecosystems and human communities to the impacts of climate change is strengthened.

To this end, additional mapping layers were applied to the project area to include the Western Cape Biodiversity Spatial Plan (CapeNature, 2023), with Critical Biodiversity Areas (CBAs) assessed in Figure 8 and Table 3.

The project area does not fall with within an area flagged by the BSP, but a CBA 1 area is highlighted outside of the site (CapeNature, 2023) (Figure 8). It is noted, however, that the CBA 1 is aligned with the existing WWTW and therefore does not fit the typical definition for this spatial layer. For the 2017 version of the WCBSP no layers are mapped in close proximity to the project area (CapeNature, 2017).

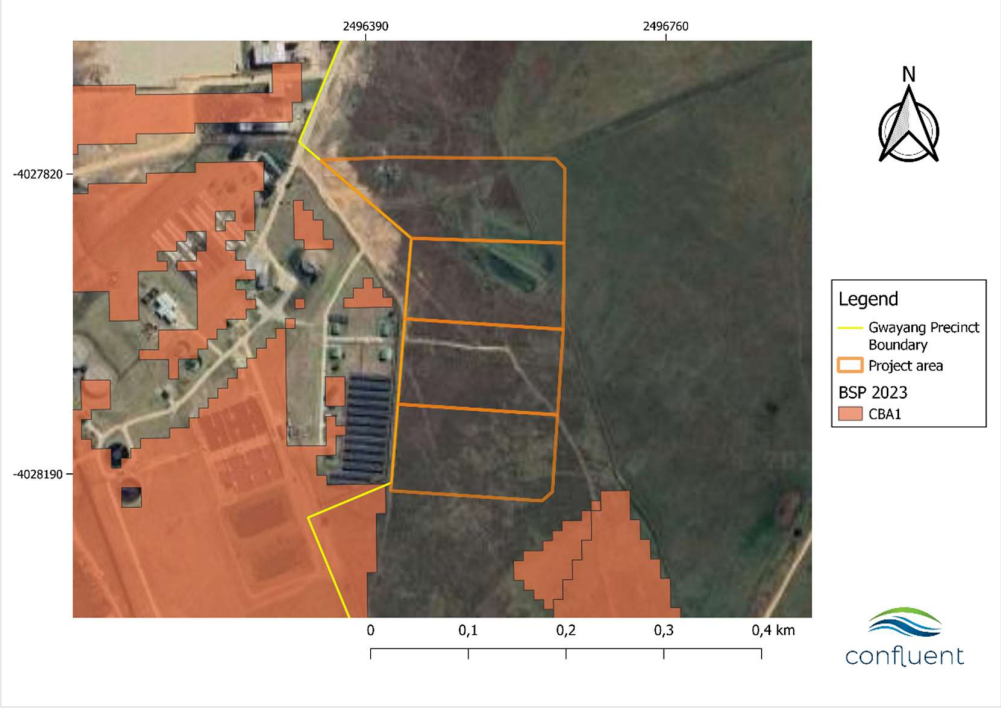

Figure 8. The project area with the layer for the Western Cape Biodiversity Spatial Plan's Critical Biodiversity Areas (CBA1) for 2023 applied.

Table 3. Definitions and objectives for conservation categories identified in the Western Cape Biodiversity Spatial Plan

WCBSP Category	Definition	Management Objective
Critical Biodiversity Area 1 (CBA1)	Areas in a natural condition. Required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.

3.3 Historical Assessment of Project Area

The project area shows little disturbance over the last 88 years (Figure 9). The oldest aerial imagery obtained for the site is in 1936, where vegetation is low to the ground and may be fynbos or pasture. Little development is present in the area and the wastewater treatment works is not established. 1957 imagery shows two waterbodies (depression wetlands) in the project area as well as some lower vegetation outside of the site which could be due to fencing for grazing. These features are not present in 1989, although some evidence of the larger waterbody is present although excavated further in a rectangular shape in an attempt to hold more water for livestock watering. The area where the waterbody was present continues to be vegetated until present, presumably colonized by wetland plants. 1989 also shows the introduction of infrastructure associated with the wastewater treatment works west of the project area. In 2003 and 2011 there is some evidence of the pasture east of the project area being irrigated with wastewater although this practice is ceased by 2025. Pasture is less overgrazed (less bare ground) in 2025 than 2011.

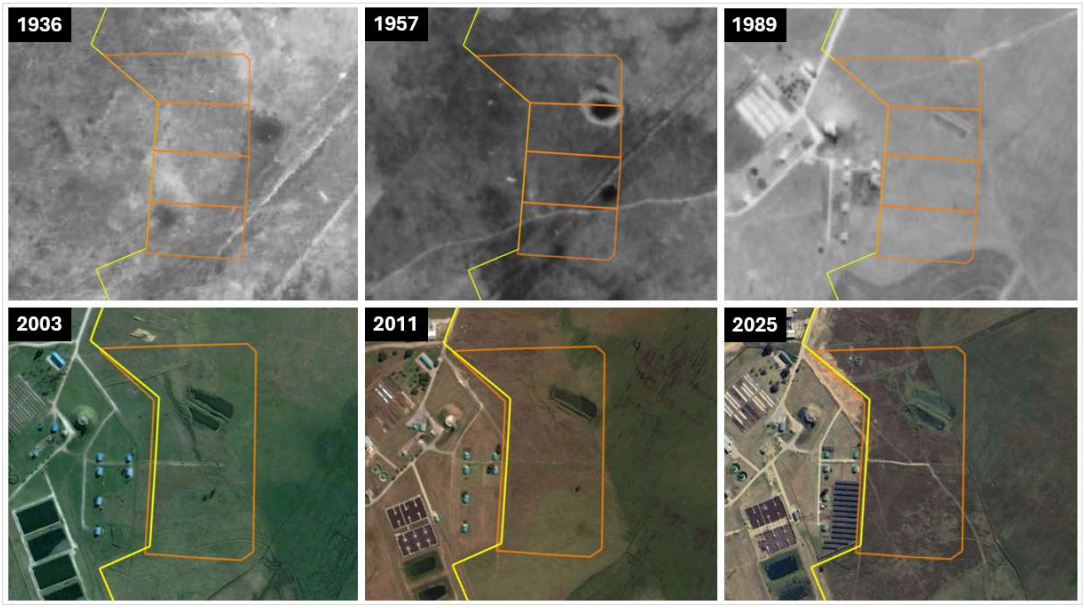

Figure 9. Historical imagery of the project area, George sourced from the CD: NGI geospatial portal and Google Earth

3.4 Species of Conservation Concern

In addition to the SCC highlighted by the DFFE screening tool (Table 1), the following public resources were consulted to provide additional SCC for the site and its immediate surroundings:

1. iNaturalist (all taxa) within 2 km x 2 km of the project area (URL for iNaturalist search area).
2. South African Bird Atlas Project (SABAP2) for pentad 3355_2225.

3. Virtual Museum records up to December 2024 for the Quarter Degree Square 3322CD.
4. Global Biodiversity Information Facility (GBIF) within ca. 5km x 5km of the project area (URL for GBIF search).

Additional SCC were included in this assessment based on the Gwayang Precinct Report:

1. The list of SCC defined for Gwayang Precinct by the DFFE Screening Tool (Table. 2)
2. SCC observed in previous site visits to the Gwayang Precinct (namely Fynbos Golden Mole (*Amblysomus corriae*) and Forest Buzzard (*Buteo trizonatus*)).

Some SCC reported on the platforms were highly unlikely to occur at the site given either clearly unsuitable habitat or being deemed a vagrant/transient animal. For example, species that are fully adapted to marine environments would not occur at the site. For the purposes of this report these animals were excluded from further assessment (see Section 4.2 for additional information and Appendix 1 for the full list of SCC flagged for the project area).

The combined list of SCC (from DFFE Screening Tool and public resource) possibly occurring within the project area, along with their habitat, breeding, and feeding requirements are listed in Table 4. The information for each SCC presented in Table 4 stems largely from the online SANBI Red List of South African Species (http://speciesstatus.sanbi.org) in addition to a few key resources for each taxa:

3. Avifauna: Roberts Birds of Southern Africa VII (Roberts, et al. 2005)
4. Mammals: The Mammals of the Southern African Subregion (Skinner 2005)
5. Invertebrates:
    - Field guide to the insects of South Africa (Picker, Griffiths and Weaving 2019)
    - Field guide to the butterflies of South Africa (Woodhall 2005)
    - Field guide to the spiders of South Africa (Dippenaar-Schoeman 2023)
6. Amphibians: A complete guide to the frogs of Southern Africa (Du Preez and Carruthers 2015)

Any information presented from different sources is cited in the text.

Table 4. Summary of habitat, breeding and feeding requirements for animal SCC potentially occurring at the site.

Species	Red list status	Habitat	Breeding	Feeding
AMPHIBIANS				
Afrixalus knysnae Knysna Leaf-folding Frog	Endangered	Typically inhabit endorheic (inward draining) wetlands with shallow water (< 50cm), high clarity, and sufficient vegetation suitable for breeding (De Lange & Du Preez, 2018). No streaming or running water was recorded at any of the sites where they have been found. The frog is associated with vegetation it can use for breeding which includes indigenous and exotic species. For example, slender knotweed *(Persicaria decipiens*) and kikuyu grass (*Cenchrus clandestinus*). It requires a habitat with diverse plant species, including shrubs, grasses, and ferns providing shelter and breeding sites (De Lange & Du Preez, 2018).	Females lay eggs on leaves which are folded and sealed by males, creating a protected environment (Du Preez & Carruthers, 2017). Breeding occurs during warmer wetter months such as September to November (De Lange, 2019). Breeding takes place near deeper parts of the waterbody, but still close to the waters' edge.	The Knysna Leaf-folding Frog is an insectivorous amphibian feeding on small invertebrates found in its habitat (e.g. insects and spiders). Foraging behaviour includes actively searching for prey on the forest/fynbos floor and in the leaf litter. The frog uses its sticky, projectile tongue to capture and quickly ingest prey. It is primarily active at night, relying on its vision to locate and capture prey in the darkness.
AVIFAUNA				
Circus maurus Black Harrier	Endangered	In Western Cape, mostly found in Fynbos, especially montane Fynbos and Strandveld. Less common in dry restios and Renosterveld. Elsewhere, occurs in dry grassland, Karoo scrub, crop fields (wheat), and grasslands (sometimes >3000m elevation). Many move from Fynbos to Karoo and Grasslands during the winter, likely to follow rodent numbers (e.g. capitalise on late summer litter of Sloggett's ice rats in Free State and Lesotho). Birds	Mainly monogamous but some polygamy observed. Mate fidelity is low. Usually a solitary nester and territorial, but in Western Cape some semi-colonial nesting is observed with less territorial behaviour. Nest is a small structure of grass, stems, and small twigs. Usually on or just above ground, in rank marsh grasses or near Fynbos bushes and sedges (*Juncus* spp.) Nests most often in marshes or next	Specialist predator of mice and birds. Predominantly rodents (vlei rats, mice) eaten by birds in Fynbos areas and small birds dominate diet of birds in mountain areas. Also takes reptiles and frogs. Insects are eaten but to a lesser extent. Sometimes caches prey. Forages most actively on blustery days (windy and rainy), hovers 1- 3m above vegetation with buoyant flight. Flashes into vegetation, hits

Species	Red list status	Habitat	Breeding	Feeding
		move away following fires and do not return for several years.	to small streams, but also on damp soil or dry ground. Nest areas are reused in successive years. There is one observation of nest site used for 26 years. Lay dates are from mid-May to mid-December with a peak in mid-August to end of September. It is, however, noteworthy that laying occurs relatively earlier under rainier conditions, particularly when rain was more intense in autumn, winter, and spring, and when summers preceding laying were wetter. Nests in coastal regions have been shown to have earlier lay dates than those located in mountain regions and to lay over a more extended period (up to two months earlier and one month later than in the interior-mountain regions) (Garcia-Heras et al., 2016)	prey hard and eats on ground. Perch hunting rare.
Circus ranivorus Marsh Harrier	Endangered	Considered a waterbird. Roosts on taller trees around wetland edges from where it has a good vantage point. Can adapt to novel wetland habitats such as wastewater treatment works.	Breeding occurs between September and December. Egg-laying is from August to November in South Africa. Nests are made of grass, reed stems, or sticks in reedbeds, short sedge areas, or in trees along the water's edge. The same nest is often reused by the same pair in following years.	Dietary assessment (Simmons et al., 1991) of pellets and prey deliveries to nests includes birds, frogs, fish, eggs, and small mammals (*Rhabdomys*, *Otomys*, and shrews). Hunts primarily in wetland habitats using various flight methods including soaring, hovering, and low flight over wetlands and along the water's

Species	Red list status	Habitat	Breeding	Feeding
				edge. May hunt in open grasslands or pastures near wetland areas.
Polemaetus bellicosus Martial Eagle	Endangered	Savanna, Karoo shrubland, and semi desert. Can occur in open farmland with clumps of trees. Rare in mountainous and forest areas. The presence of electricity pylons has increased distribution in the Karoo (Doherty, 2023)	Monogamous with pair bond lasting several seasons. Solitary nester. Nest is a substantial platform of sticks (up to 1.5m long and 3cm thick) on tall trees or pylons. Nest tree usually tallest in vicinity, and nest placed in a large fork below the canopy. Rarely uses rocky outcrops.1 egg laid, incubation 48-53 days predominantly by female bird.	Mainly small mammals like hare, jackal, small antelope, mongoose, small baboons, but also small stock animals, birds (especially gamebirds) and reptiles (especially monitor lizards). Usually hunts on the wing by soaring high and attacking in long slanting stoop. Surprises prey by using available cover. Occasionally hunts from perch, especially at waterholes or along game trails. Prey killed by impact or strangulation and taken to high perch to eat.
Afrotis afra Southern Black Korhaan	Vulnerable	Renosterveld, strandveld, and succulent karoo shrublands. Rare in agricultural fields. Largely confined to areas of natural vegetation. Favours renosterveld but can tolerate dense vegetation provided there is open space between shrubs. Endemic to South Africa, being confined to the winter- and mixed winter-summer rainfall areas of the albany thicket, fynbos and succulent karoo biomes, and the southern extreme of the nama karoo biome, in the Western, Northern and Eastern Cape provinces. Primary threat to the species is habitat loss and degradation due to cultivation. Susceptible to powerline collisions.	Polygynous, no evidence of permanent pair-bonds. Solitary nester. Males display regularly and noisily at regularly used sites. Egg is laid on the ground where it conceals female incubating under shrubs. Laying dates August-November, incubation only by female.	Forages by walking and pecking close to ground. Diet includes insects, small reptiles, and plant material (green shoots). Eats invasive *Acacia* seeds possibly aiding their dispersal.

Species	Red list status	Habitat	Breeding	Feeding
Bradypterus sylvaticus Knysna warbler	Vulnerable	Inhabits dense understorey vegetation along riverbanks in fynbos forest patches, riverine woodland, and afromontane forest and has even adapted to thickets of non-native brambles (e.g. *Rubus*). (BirdLife International, 2016).	Breeds from August and December coinciding with the greatest abundance of invertebrate species. (BirdLife International, 2016).	Forages mostly on the ground, creeping through dense, matted vegetation and scratching in humus. Eats mostly grasshoppers, insect larvae, spiders, slugs, and worms
Falco biarmicus Lanner Falcon	Vulnerable	Most frequently in open grassland, cleared woodlands, or agricultural lands. Breeding pairs favour habitat close to cliffs but will also be found near alternative roosting sites like electricity pylons, buildings, and large trees.	Monogamous, long-term pair bond, territorial. Nest is typically a simple scrape on cliffs, in buildings, or in bird boxes. Will occasionally use stick nests from other species (including White-necked raven, Verreaux's eagle, Bateleur) in trees or on electricity pylons.	Hunts from high perches or from the air, using speed to surprise and catch prey but also adept at using cover. Prey taken in air and on ground. Pairs can hunt co-operatively. Prey mostly birds (> 80%) but will also take reptiles and insects.
Neotis denhami Denham's Bustard	Vulnerable	Inhabits a mosaic of cultivated pastures, agricultural croplands, and natural vegetation, with seasonal variation in their preferences (Allan, 2002). Cultivated pastures are favoured habitat during winter in the southern Cape (Allan, 2002). Harvested cereal crop fields (stubble fields) are favoured, but ploughed fields and fields with growing cereal crops are avoided (Allan, 2002). Primarily inhabits open grasslands and African savannas (Allan, 2002). Being large-bodied with low flight manoeuvrability also leads to preference for open habitat. Preference for grasslands with a mix of short and tall grasses, and good visibility for foraging. Proximity to water sources, such as rivers or wetlands, is important for drinking	Male courtship displays occur between August and January, but mainly in September and October (Allan, 2002). Eggs are laid in September and October, with unfledged young present between September and January (Allan, 2002). Preference for natural vegetation over pastures during summer breeding months. Larger bird groupings occur in winter, while in summer smaller groupings or individual birds occur. Nesting sites are concealed in open grasslands, often near vegetation or shrubs. Females construct shallow ground nests lined with grass or plant	Ground-dwelling bird that forages in open grasslands and savannas (Tarboton, 1989). Diet is omnivorous including insects, seeds, fruit, and vegetation. Grasshoppers, beetles, and termites are important insect prey, especially in the breeding season (Allan, 2002). Feeding technique is probing and pecking the ground with their long bills. Opportunistically feed on grasshopper swarms.

Species	Red list status	Habitat	Breeding	Feeding
		and potential foraging (Allan, 2002). Avoids dense forests and habitats with high human disturbance.	materials. Clutches consist of 1-3 eggs, incubated primarily by the female. Incubation lasts around 21-24 days.	
Sagittarius serpentarius Secretarybird	Vulnerable	Grassland, open savanna, and Karoo shrubland with scattered trees. Can occupy other short-grass areas. Absent from rocky hills and dense woodlands.	Monogamous and solitary nesting. Territorial with home ranges usually 50-60 km^2 around nests, actively defends against conspecifics. Nest is a large flat platform on top of flat thorn trees (*Senegalia* or *Vachellia* spp.) or black wattle (*Acacia mearnsii*). Nests can be reused in successive years. 1-3 eggs laid, incubation 40-46 days.	Anything it can overpower: insects, reptiles, birds, small mammals. Attracted to recently burnt areas for prey but does not eat carrion. Most prey caught on ground with bill and swallowed whole. Larger prey killed with downward blows of feet and torn up before swallowing.
Stephanoaetus coronatus African Crowned eagle	Vulnerable	Forest (including gallery forest), dense woodlands, and forested gorges in Savannas and Grasslands. Also in *Eucalyptus* and pine plantations. Perches for long periods, resting in canopy. Sometimes soars high over territory, then descends vertically to perch. Manoeuvres agilely through thick forest, can take off vertically from forest floor. The crowned eagle is a forest specialist, so it generally only nests in the remnant forests or exotic tree plantations in the urban mosaic landscape	Monogamous, possibly long-term pair bond. Territorial (at least 10 km^2), solitary nester. Tallest trees used to build large stick platform nest (sticks/branches up to 1.5m long, 3cm thick). Nest copiously lined with beechwood (*Faurea saligna*), pine or *Eucalyptus* leaves/needles. Nest often reused and added to in consecutive years, can reach up 2-3m in diameter, 3m high. Nest trees often at the base of a cliff/ravine or at the edge of plantation. Nest trees are usually White Stinkwood (*Celtis africana*), yellowwoods (*Podocarpus* spp.), Cabbage tree (*Cussonia spicata*)	Predominantly feeds on mammals such as hyrax, antelope, and primates. Will also take porcupine, hares, mongoose, sometimes domestic stock and domestic cats/dogs. Avian prey includes Hadeda Ibis, Egyptian Geese and domestic chickens. Reptile prey mainly Monitor Lizards. Most prey taken on ground, but occasionally crashes into dense foliage in pursuit. Frequently still-hunts (stalks prey) and hunts from concealed perches frequently above waterholes in evening waiting for antelope to drink. Pair sometimes hunt monkeys

Species	Red list status	Habitat	Breeding	Feeding
			but also *Eucalytus* and pine species. Incubation 49 to 51 days.	cooperatively. Prey struck with downward blow of open foot, massive hind claw penetrates the skull killing instantly. Large prey that cannot be lifted are partly eaten and dismembered on the ground and then cached in trees.
Anthropoides paradiseus Blue Crane	Near Threatened	Open Grassland, Grassland-Karoo mosaic, and wetlands. Habitats with >300mm per year annual rainfall. Adapted to crop lands and pastures and tolerant of intense grazing or burnt grasslands.	Monogamous, solitary nester. Nests on wet ground (on a pad of vegetation) or dry ground (small layer of stones, dung, and vegetation). Often reuses the same nesting site for several years.	Pecking and digging with bill. Omnivorous, feeds on small bulbs, seeds, roots, insects, crabs, amphibians, fish, and small mammals. Eats crops (maize, lucerne, wheat) and sometimes noted as causing damage, but also eats insect pests. Commonly feeds at small stock feedlots
Coracias garrulus European Roller	Near Threatened	Non-breeding migrant to South Africa, non-breeding range entirely within sub-Saharan Africa. Most widespread in East and Southern African savannas. Occurs throughout South Africa in patchy distribution, but irregular visitor to Eastern and Western Cape. Occurs in open savanna but most common in broadleaf habitats with grassy clearings and less common in areas without a well-developed woody cover.	Non-breeding visitor to region.	Frequently perches in the open (on branches, telephone poles/ wires). Forages from perch with sit-and-wait technique, also hawks insects in flight. Attracted to bush fires. Feeds predominantly on insects but also on other arthropods such as spiders, and centipedes (Nupen *et al.,* 2023). It has also been documented to prey on frogs and reptiles.
Buteo trizonatus Forest Buzzard	Least Concern (Regional), Near	Afromontane forests and plantations (mainly Pine, but also *Eucalyptus*). Generally unobtrusive, perching on large branches partially concealed under canopy,	Monogamous, territorial, solitary nester. Nest is platform of sticks, cup-lined with green leaves. Nests in plantations are smaller than in	Forages along forest edges and within forests (also in plantations). Hunts mainly from perch. Diet consists of small mammals (mice

Species	Red list status	Habitat	Breeding	Feeding
	Threatened (Global)	sometimes perching in the open at the edge of forests.	native forests. Laying dates from August to November. Breeding is confined to the Western Cape and Eastern Cape Provinces.	and moles), small birds, snakes, lizards, frogs, and invertebrates.
TERRESTRIAL INVERTEBRATES				
Thestor barbatus Bearded Skolly	Critically Endangered	Range restricted and endemic to Nama Karoo and Western Cape. Only present in one location in Paardepoort mountain range, north of George. Rocky terrain on the higher slopes of mountains. Threatened by alien tree encroachment (pine and *Hakea*).	Single brood in December.	Little is known.
Aneuryphymus montanus Yellow-winged Agile Grasshopper	Vulnerable	Very low area of occupancy between 100 and 1000 km². Threatened by declining habitat due to invasion by aliens and habitat transformation. Strong association with sclerophyllous fynbos vegetation on the southern slopes of the Outeniqua mountains, post-fire. Threats to the species include habitat transformation and invasion by alien plants.	Not known	Not known
Ceratogomphus triceraticus Cape Thorntail Dragonfly	Near Threatened	Wide range throughout the Western Cape. Pools in streams, and occasionally in reservoirs. Rocky, shallow rivers, with deposition pools, and possibly farm dams. Usually in fairly open or hilly countryside. Main threat is invasive alien trees, loss of habitat, water pollution and to lesser extent agriculture. Clearing of alien trees greatly benefits species.	Not known.	Little is known, but taxon is insectivorous.

Species	Red list status	Habitat	Breeding	Feeding
Ecchlorolestes nylephtha Queen Malachite Damselfly	Near Threatened	Known from streams near Storms River and in the Tsitsikamma Forest (Western Cape and Eastern Cape) (Samways, 2006). Endemic to South Africa. Occupies a very specific microhabitat of small, fern-fringed streams in the deep shade of the forest. Core flight period is early-late summer (November to February) (Samways and Grant, 2007) but individuals have been seen on wing in April.	Little known, but the genus typically lays eggs on tender green shoots of vegetation overhanging streams	Little is known, but taxon is insectivorous.
MAMMALS				
Sensitive Species 8	Vulnerable	Specialised habitat requirements within a home range of approximately 0.75 ha (Skinner & Chimimba, 2005). Strong habitat preference for dense vegetation with good undergrowth providing good cover in which to retreat. Forest, thicket, dense coastal bush, independent of water. Can inhabit forest edges and transitional zones. Requires diverse plant community with a variety of tree and shrub species. Can adapt to fragmented habitat given sufficient cover and food availability. Actively avoids open grasslands, and areas with human disturbance.	This species can breed throughout the year. Males establish territories and exhibit aggressive behaviours towards other males as well as to attract females.	Highly selective feeders, often feeding on food below troops of monkeys or frugivorous birds which drop lots of material. Preference for fruit, but also fallen leaves, flowers and insects. Seldom actively browse. Active in the early morning and late afternoon, foraging for around 8 hours a day within their territory.
Amblysomus corriae Fynbos Golden Mole	Near Threatened	Sandy soils and soft loams in mountain fynbos, grassy fynbos and renosterveld of the south-west Cape. Also, afromontane forest and southern African moist savanna along the southern Cape coast. Favours richer and wetter soils (Broom, 1907) preferring forest fringes and associated	Fynbos Golden Moles probably breed aseasonally because pregnant females have been captured in August, May, and December. Mean litter size is two; young are altricial and hairless at birth.	Feeds mainly on earthworms and insects (Skinner & Chimimba, 2005).

Species	Red list status	Habitat	Breeding	Feeding
		fynbos. Thrives in gardens, cultivated lands, golf courses and livestock paddocks. Present also in exotic plantations at lower densities (Bronner, 2013).		

4. FIELD ASSESSMENT

4.1 Methods

Following the Species Environmental Assessment Guidelines (SANBI 2020) and Table 4, taxa-specific sampling techniques were conducted in habitats where SCC were likely to occur. Taxa-specific sampling was interspersed with a meander across the project area to collect additional opportunistic data for all fauna and inspect all habitat types (Table 5).

Table 5. Sampling techniques conducted for potential SCC occurring in the project area.

Taxa	Field methods	Public platform where observations were reported
Avifauna	• Meander* across site for direct observations. • 2 point counts (5-minute bird counts).	iNaturalist (photos)
Mammals	• Meander* across site for direct observations, tracks, scats and signs.	iNaturalist (photos)
Amphibia	• Meander* across site for direct observations. • Active searching.	iNaturalist (photos)
Invertebrates	• Meander* across site for direct observations. • Active searching. • Sweep netting.	iNaturalist (photos)

* Meandering involved slow walking across the site through various habitat types and key landscape features. Active observations took place for all fauna throughout this walk which was then supplemented by taxa specific sampling methods in habitats deemed most suitable for SCC.

4.2 Assumptions and Limitations

1. While the public platforms mentioned in Section 3.4 are excellent sources of additional information for animal species occurring in an area, these results require some expert interpretation to determine which of the SCC are relevant to include in the faunal assessment of the project area. For example, the coarse spatial scale of reporting within the Virtual Museum platforms (Quarter Degree Square level (27km x 27km) or SABAP2 pentad level (9km x 7 km)) can result in species records from habitats quite different to those present on site. Additionally, these platforms include sightings of vagrant or transient animals upon which an assessment cannot reasonably be based. Expert interpretation is therefore applied to the full list of SCC identified by the various public platforms (see Appendix 1) and some species are then excluded from further

assessment due to the project area clearly lacking suitable habitat or the species clearly representing a vagrant or transient animal outside its normal range. The SCC assessed in this report therefore represent those which may reasonably occur on site. However, there is always the possibility that some SCC (although highly unlikely to occur on site) are overlooked in this process.

2. Two field visits (13/03/2025 and 25/03/2025) took place to the site for the faunal assessment. The detectability of animal species increases with more visits. This assessment therefore only represents a “snap-shot” in time and it is possible that SCC occurring on site were not observed during the visit. These results should therefore be interpreted with this in mind and not be treated as an exhaustive list of species occurring on site.
3. Site visits took place during daylight hours so the likelihood of encountering nocturnal species was limited.
4. The site visit coincided with early autumn. This may be of consequence for some species showing seasonal variation in breeding and activity patterns.
5. Evidence of animals in the form of tracks, scats, and signs always brings with it a level of uncertainty, but best efforts were made in this regard, and uncertainties are highlighted in the report.
6. There were security concerns at the site due to it being used as throughfare for pedestrians to the municipal dump. The maintenance of high vigilance may have led to some tracks, scats, and signs being overlooked.

4.3 Site Inspection Details

Two site visits took place on 13 March 2025 and 25 March 2025. The weather was cloudy with rain later in the morning. Vegetation type mapped for the site according to the National Vegetation Map is Garden Route Granite Fynbos. The site is comprised entirely of pasture (graminoids) dotted with bushes (predominantly *Solanum linnaeanum*) with the excavated depression wetland being largely the same vegetation type with the addition of small, heavily grazed wetland plants some of which were indigenous (See Botanical Specialist Report—Bianke Fouche; Figure. 10). The area is flat with excellent visibility for spotting larger fauna. An effort was made to cover the project area with the meander and to conduct taxa specific sampling techniques across a range of suitable habitats for potential SCC (Figure. 11).

Figure 10. The habitat type identified in the project area as pasture with (A.) The infilled dam, (B.) Taken from the eastern border to the west across the site with Gwaing WWTW in the background, (C.) The presence of domestic cattle (Bos taurus) indicates that the land is used as pasture and, (D.) The view from the southern edge towards the north across the project area.

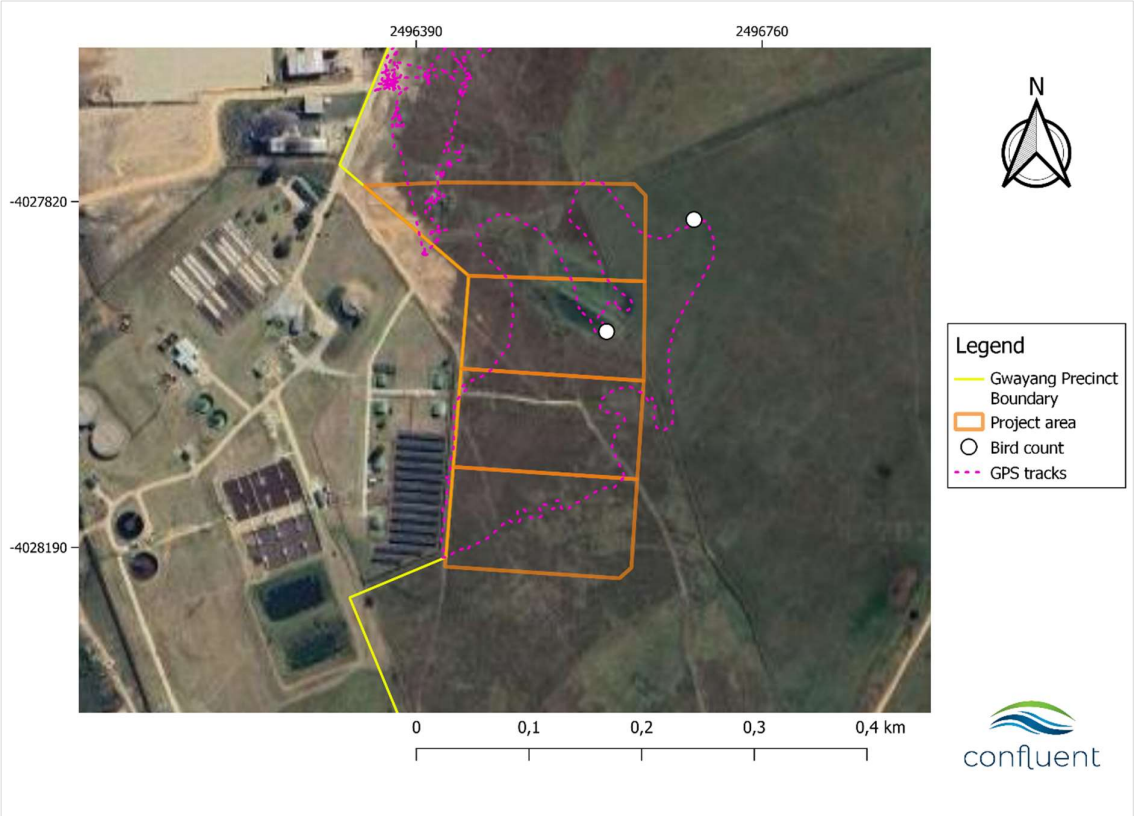

Figure 11. GPS tracks of the site visits conducted in March 2025.

4.4 Results

4.4.1 Avifauna

No SCC were encountered during the site visit. Two bird counts were conducted: one within the project area, and one looking into the project area. Opportunistic sightings were also noted throughout the meander and searches for nests/roosting sites were done in suspected habitat. Species identified are primarily those commonly associated with pasture. A total of 12 bird species were identified during the site visit (See Appendix 2), with some photographed (Figure 12)

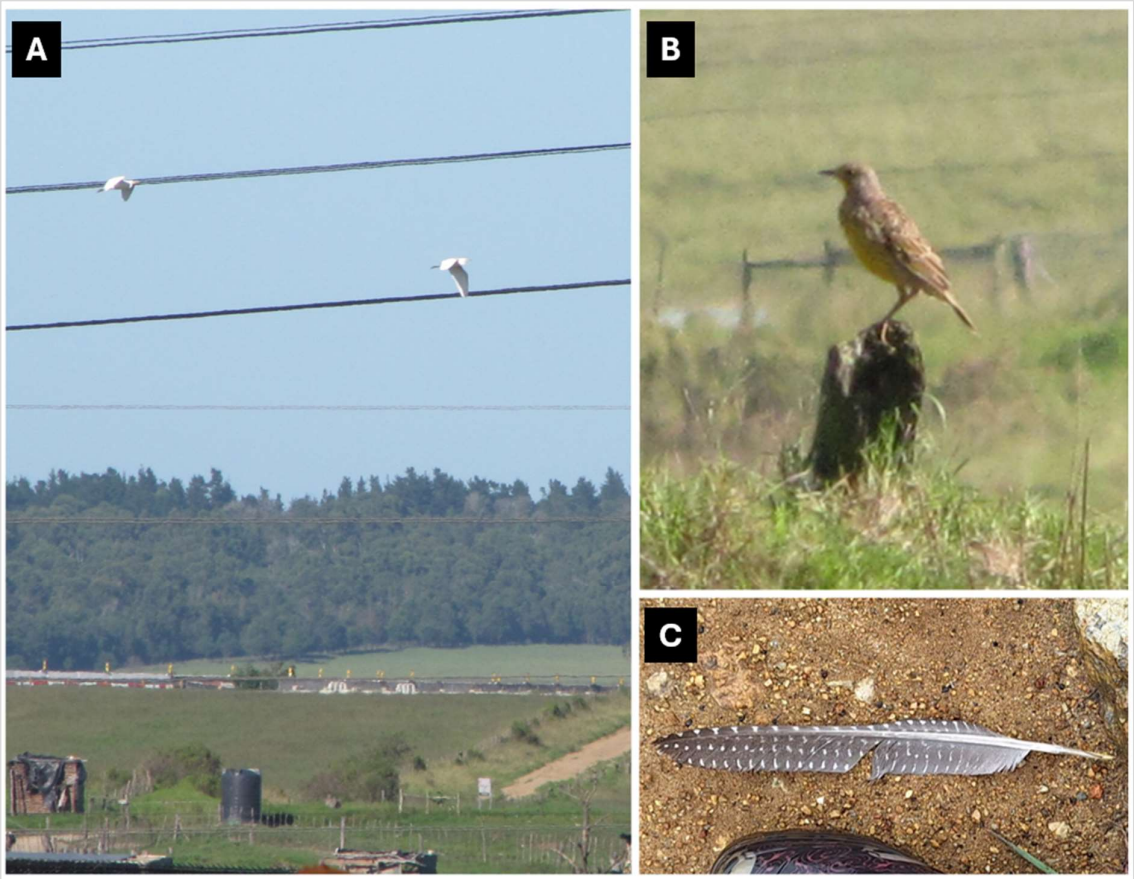

Figure 12. Some birds found in the project area where (A.) Western Cattle Egrets (Bubulcus ibis), typically found in pasture in association with cattle, (B.) A suspected Orange-throated Longclaw (Macronyx capensis) and, (C.) Numerous Helmeted guineafowl (Numida meleagris) were found at the site, as evidenced by their feathers.

4.4.2 Mammals

No mammal SCC were found at the site. There was no evidence of sub-surface tunnelling by Fynbos golden moles (*Amblysomus corriae*) inside or close to the project area, although it has been found elsewhere in the Gwayang Precinct (ca 0.35 km north of the site). The only subterranean mammal present is the molerat (Bathyergidae), as evidenced by the presence of molehills (Figure. 13). A mongoose (Herpestidae) was observed north of the site. Domestic cattle (*Bos taurus*) were found grazing across the project area and beyond, with most of the grazing happening in the project area rather than in the fenced area just east of the site. Cattle herders also often had dogs (*Canis familiaris*) with them (Figure 13) which, along with high visibility on the ground providing little opportunity to escape predators and heavy grazing removing forage, may act also act as a deterrent to small mammals.

Figure 13. Some mammal species highlighted for the project area is namely (A.) Domestic dog (Canis familiaris) accompanying (B.) domestic cattle (Bos taurus) and their herders, as well as molerat (Bathyergidae) hills observed.

4.4.3 Terrestrial invertebrates

No SCC were found during the site inspections. A number of butterflies and moths (Lepidoptera) were encountered, as were insects of other orders such as true bugs (Hemiptera) and grasshoppers (Orthoptera). Figure.14 shows some insects photographed at the site. See Appendix 3 for the full list of terrestrial invertebrates found in the project area.

Figure 14. Some insects photographed in the project area during the site inspections in March 2025 namely: (A.) Geometer moth (Grammodes stolida), (B.) Broad-bordered grass yellow (Eurema brigitta brigitta), (C.) Spotted Red Spittle Bug (Locris arithmetica), (D.) Western Cape autumn widow (Dira clytus clytus), (E.) Elegant Grasshopper (Zonocerus elegans) and, (F.) Vestal moth (Rhodometra sacraria).

4.4.4 Amphibians

No amphibians were found, which is not surprising given the lack of any waterbodies/watercourses present on site. Consequently, there was no suitable habitat for the amphibian SCC.

4.4.5 Reptiles

No reptile SCC were highlighted for this site by the DFFE Screening Tool or any of the public platforms. As such, no targeted sampling took place for this group. No opportunistic observations were made of individuals in the clade.

4.4.6 Likelihood of Occurrence for SCC

Following the terrestrial fauna surveys and site inspection, the possible SCC occurring in the project area was evaluated according to their likelihood of occurrence (Table 6). It is always possible that a species assessed as having a low probability of occurrence can still occur on the site, especially species which are listed as having a low likelihood of detection, and therefore this table should only be used as a guideline.

Table 6: Likelihood table for faunal SCC suspected to occur within the project area.

Red list status	Species	Observed	Suitable habitat	Likelihood of occurrence	Reason
AMPHIBIAN					
Endangered	*Afrixalus knysnae* Knysna Leaf-folding Frog	No	No	Low	No wetlands are present at the site.
AVIFAUNA					
Endangered	*Circus maurus* Black Harrier	No	No	Low	No suitable habitat is present, nor is breeding space available for this SCC. The area may be used for foraging since rodents may be present-- rodents are fairly ubiquitous although evidence of their presence was not detected.
Endangered	*Circus ranivorus* Marsh Harrier	No	No	Low	No wetlands are present to support this SCC.
Endangered	*Polemaetus bellicosus* Martial Eagle	No	Yes	Low	Suitable habitat may be present to host this SCC but high disturbance would make this an unattractive option. Additionally, a variety of preferred prey species are not available at the site.
Vulnerable	*Afrotis afra* Southern Black Korhaan	No	No	Low	No suitable habitat exists for the species in the project area.
Vulnerable	*Bradypterus sylvaticus* Knysna warbler	No	No	Low	No dense vegetation is present at the site.
Vulnerable	*Falco biarmicus* Lanner Falcon	No	No	Low	This SCC is a partial seasonal migrant, moving to the fynbos biome during the non-breeding season. The site is not suitable for the species and lacks suitable roosting areas.
Vulnerable	*Neotis denhami* Denham's Bustard	No	Yes	Medium	High human disturbance and lack of varying vegetation heights is a limiting factor for the presence of this SCC. No verified sightings in the SABAP2 pentad, however it is

Red list status	Species	Observed	Suitable habitat	Likelihood of occurrence	Reason
					noted that the Gwayang Precinct report mentions that a bird that fits the description of a Denham's Bustard was mentioned anecdotally by people who use the pastures.
Vulnerable	*Sagittarius serpentarius* Secretarybird	No	No	Low	No suitable natural habitat is present to support the SCC. No verified sightings in the SABAP2 pentad.
Vulnerable	*Stephanoaetus coronatus* African Crowned Eagle	No	No	Low	No suitable habitat and prey is present at the site.
Near Threatened (Global: Vulnerable)	*Anthropoides paradiseus* Blue Crane	No	Yes	Medium	Both suitable habitat (heavily grazed pasture) and forage (easy to come by for generalist feeders such as this SCC) are present. Nesting sites are often re-used but none were found during the site visit— the species does not use the site for breeding, if present. It is noteworthy that the SCC is very mobile, has a fairly large population size, and a sizeable known distribution.
Near Threatened	*Coracias garrulus* European Roller	No	No	Low	Although some recent reports of the species in the province exist, it is considered a rarer bird in this area and is not likely to use the project area.
Least Concern (Regional), Near Threatened (Global)	*Buteo trizonatus* Forest Buzzard	Yes	Yes	Medium	The SCC was observed when the field visits for the Gwayang Precinct were conducted, although not when field work was conducted for the Gwaing BBF. Habitat is only suitable to obtain forage and may be used opportunistically for this purpose. This use, however, is opportunistic rather than obligate. Many other areas are present in the landscape where suitable prey species would be present along with other favourable landscape characteristics for the species such as tall trees in which to breed and roost.
TERRESTRIAL INVERTEBRATES					

Red list status	Species	Observed	Suitable habitat	Likelihood of occurrence	Reason
Critically Endangered	*Thestor barbatus* Bearded Skolly	No	No	Low	No suitable habitat exists this SCC.
Vulnerable	*Aneuryphymus montanus* Yellow-winged Agile Grasshopper	No	No	Low	No suitable habitat (sclerophyllous vegetation) exists for this SCC.
Near Threatened	*Ceratogomphus triceraticus* Cape Thorntail Dragonfly	No	No	Low	No suitable watercourses are present in the project area.
Near Threatened	*Ecchlorolestes nylephtha* Queen Malachite Damselfly	No	No	Low	This SCC has particular microhabitat requirements that would not be fulfilled at the site.
MAMMALS					
Vulnerable	Sensitive Species 8	No	No	Low	No suitable forest or forest edge habitat is present to host the species.
Near Threatened	*Amblysomus corriae* Fynbos Golden Mole	No	No	Low	Although this SCC has been found north of the project area, a thorough field assessment both for the Gwayang Precinct and for this area in particular, found no evidence of the SCC in the project area. The SCC typically leaves conspicuous subterranean foraging tunnels.

5. SITE SENSITIVITY VERIFICATION

After the site visit and fauna surveys, it is determined that the site sensitivity for the terrestrial animal theme of the project area is **LOW**. This differs from the **HIGH** and **MEDIUM** sensitivities assigned by the DFFE Screening tool for the site.

Based on the information in this report during the desktop and field assessment, the following reasons support this finding:

- No SCC were found during the site visit, and none have a high likelihood of occurrence.
- The medium likelihood of occurrence of Near threatened (IUCN: Vulnerable) Blue Crane (*Anthropoides paradiseus*) and Vulnerable Denham's Bustard is due to a suitable habitat (intensely grazed pasture) being present and their known presence in the landscape (based on records and anecdotal evidence, respectively). It is, however, noted that both species have a wide distribution and no factors pointing to the continuous use of the project area (no evidence of nests). It is also noted that, albeit suitable, the habitat at the site is not preferred for Denham's Bustard and superior sites may be present in the greater landscape.
- Least Concern (IUCN: Near threatened) Forest Buzzard (*Buteo trizonatus*) was observed in the larger Gwayang Precinct. Forest Buzzard prefers forest habitat which is not present at the site. The site may make suitable hunting grounds, although this is true of the larger landscape—any hunting of prey at this site is opportunistic rather than obligate. This holds for other raptors observed in the Gwayang Precinct report that are not SCC.
- No subterranean tunnels typically made by Near threatened Fynbos Golden Moles (*Amblysomus corriae*) were found at the site and it is therefore given a low likelihood of occurrence. This is despite the SCC being found in the Gwayang Precinct ca 0.35 km north of the project area since mobility is low for small, semi-fossorial mammals.

As per the Published Government Notice No. 1150, Government Gazette 43855 (30 October 2020), the **LOW** sensitivity of the site allows for a Terrestrial Animal Species Compliance Statement to be issued.

6. COMPLIANCE STATEMENT AND RECOMMENDATIONS

Following on from the site sensitivity verification for the Terrestrial Animal Species Theme, a compliance statement is issued for the proposed Gwaing Biosolids Beneficiation Facility.

General recommendations and best practice guidelines should be followed for all animal species encountered (regardless of whether they are SCC or not) during any stage of construction at the site. These are summarised in Box 1 below:

Box 1: Best practice principles for ALL fauna encounters during construction or operational phases of projects

If any animals are seen on site, a photo or a video should be taken if possible (to assist in identification) and all fauna encountered on site should be reported to the EO or ECO immediately. This is particularly important when:

- An animal is harmed or compromised in any way during construction.
- Ground-dwelling animals their nests or eggs are unearthed during construction (e.g. moles, tortoise eggs, terrapins/frogs estivating).
- Any animal with limited mobility is found on site (e.g. tortoises, moles, chameleons).
- Any potentially dangerous animal is encountered. This includes any potentially venomous animal (e.g. snakes, scorpions) or any medium-large animal that has become cornered in an enclosed area such that it cannot escape (e.g. porcupines, monkeys, baboons, antelope). It is critical in the case of snakes/ scorpions to get pictures/videos to aid in identification and appropriate treatment of anyone needing medical assistance.
- Any animal that shows a reluctance to escape or move away from the construction site thereby increasing its exposure to harm or increasing the risk of injuring people on site.

The EO or ECO should provide guidance or assistance to get all animals to safety, treating any injured animals, and issuing instructions on when to continue with construction (once they are satisfied that all animals have been removed from site) or put additional mitigation measures in place to protect animals on the site from harm.

For any injured animals or animals to be removed from site (domestic or wild):

A local SPCA or animal welfare society can collect and treat most animals and should be the first point of call for assistance. If they cannot directly assist, they will revert and notify the relevant authorities/vets.

For any assistance with snake removals/relocations, identifications, or bite treatment contact the African Snakebite Institute. The contact details of a suitably qualified snake handler can be found at the following link: https://snakeremoval.co.za/george

SNAKEBITE EMERGENCIES:	
Poisons Information Helpline	+27 861 555 777
Dr Jenna Taylor	+27 83 631 4816
Dr Christoff Bell	+27 73 174 0199
Johan Marais	+27 82 494 2039
Jason Seale	+27 82 781 8498
Arno Naude	+27 83 739 9303
Dr PJC Buys	+26 481 127 5109 (Namibia)

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APPENDIX 1: SCC IDENTIFIED FOR THE PROJECT AREA.

SCC were included or excluded from further analysis in this report based on expert interpretation for the presence/absence of key landscape and habitat features on site. See Section 4.2 Assumptions and Limitations for more information.

Species	Common name	Regional, Global Assessment status	Source	Assessed in report Y/N
AMPHIBIAN				
Afrixalus knysnae	Knysna leaf-folding frog	EN	Screening Tool	Y
AVIFAUNA				
Afrotis afra	Southern Black Korhaan	VU, VU	iNaturalist	Y
Alcedo semitorquata	Half-collared Kingfisher	NT, LC	SABAP2	N
Aquila verreauxii	Verreaux's Eagle	VU, LC	SABAP2	N
Bradypterus sylvaticus	Knysna warbler	VU	Screening Tool; GBIF	Y
Buteo trizonatus	Forest Buzzard	LC, NT	iNaturalist	N
Circus maurus	Black Harrier	EN, EN	SABAP2	Y
Circus ranivorus	African Marsh Harrier	EN, LC	SABAP2	Y
Coracias garrulus	European Roller	NT, LC	GBIF	Y
Crithagra leucoptera	Protea Canary	NT, NT	SABAP2	N
Falco biarmicus	Lanner Falcon	VU, LC	SABAP2	Y
Grus paradisea	Blue Crane	NT, VU	SABAP2	Y
Gyps coprotheres	Cape Vulture	EN, VU	iNaturalist	N
Leptoptilos crumenifer	Marabou Stork	NT, LC	SABAP2	N
Neotis denhami	Denham's bustard	VU	Added from Gwayang Precinct list	Y
Numenius arquata	Eurasian Curlew	NT, NT	GBIF	N
Oxyura maccoa	Maccoa Duck	NT, EN	GBIF	N
Phoenicopterus roseus	Greater Flamingo	NT, LC	GBIF	N
Polemaetus bellicosus	Martial Eagle	EN, EN	SABAP2	N
Procellaria aequinoctialis	White-chinned Petrel	VU, VU	GBIF	N
Sagittarius serpentarius	Secretary bird	VU	Added from Gwayang Precinct list	Y

Species	Common name	Regional, Global Assessment status	Source	Assessed in report Y/N
Sarothrura affinis	Striped Flufftail	VU, LC	SABAP2	N
TERRESTRIAL INVERTEBRATES				
Aneuryphymus montanus	Yellow-winged agile grasshopper	VU	Screening Tool	Y
Ceratogomphus triceraticus	Cape Thorntail	NT	Virtual Museum	Y
Ecchlorolestes nylephtha	Queen Malachite	NT	Virtual Museum	Y
Thestor barbatus	Bearded skolly	CR	Virtual Museum	Y
MAMMALS				
--	Sensitive species 8	VU	Screening Tool	Y
Amblysomus corriae	Fynbos Golden Mole	NT	Virtual Museum	Y
Damaliscus pygargus pygargus	Bontebok	VU	Virtual Museum	N
Pelea capreolus	Vaal Rhebok	NT	Virtual Museum	N
Poecilogale albinucha	African Striped Weasel	N	Virtual Museum	N
Aonyx capensis	African Clawless otter	NT	GBIF	N
Panthera pardus	Leopard	VU	Virtual Museum	N

APPENDIX 2: AVIFAUNA SPECIES OBSERVED DURING SITE VISITS

Common name	Scientific name
Helmeted Guineafowl	*Numida meleagris*
Barn Swallow	*Hirundo rustica*
Common Starling	*Sturnus vulgaris*
Pied Crow	*Corvus albus*
Southern Fiscal	*Lanius collaris*
Speckled Pigeon	*Columba guinea*
Crowned Lapwing	*Vanellus coronatus*
Western Cattle Egret	*Bubulcus ibis*
Hadada Ibis	*Bostrychia hagedash*
Ring-necked dove	*Streptopelia capicola*
Cape Long-billed Lark	*Certhilauda curvirostris*
Orange-throated Longclaw	*Macronyx capensis*

APPENDIX 3: INVERTEBRATE SPECIES OBSERVED DURING SITE VISITS

Order	Family	Common name	Scientific name	Notes
Araneae	Pisauridae	Dark sheetwebber	*Euprosthenopsis pulchella*	Suspected based on webs and web location
Hemiptera	Cercopidae	Spotted red spittle bug	*Locris arithmetica*	Direct observation
Hemiptera	Reduviidae	Assassin bug	Reduviidae	Direct observation
Lepidoptera	Geometridae	Geometer moth	*Grammodes stolida*	Direct observation
Lepidoptera	Geometridae	Vestal	*Rhodometra sacraria*	Direct observation
Lepidoptera	Lycaenidae	Blues	Lycaenidae	Direct observation
Lepidoptera	Noctuidae	Creamstriped owl	*Cyligramma latona*	Direct observation
Lepidoptera	Nymphalidae	Painted lady	*Vanessa cardui*	Direct observation
Lepidoptera	Nymphalidae	Western cape autumn widow	*Dira clytus clytus*	Direct observation
Lepidoptera	Pieridae	Broad-bordered grass yellow	*Eurema brigitta brigitta*	Direct observation
Orthoptera	Acrididae	Elegant grasshopper	*Zonocerus elegans*	Direct observation
Orthoptera	Acrididae	Short-horned grasshopper	Acrididae	Direct observation